

Magnet Evidence Lab

Use test results to compare magnetic tools.

S5P3.a "Construct an argument based on experimental evidence to communicate the differences in function and purpose of an electromagnet and a magnet."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each sentence that reports a test result. Circle words or phrases that show how an electromagnet and a bar magnet function differently or have different purposes.

The Clip-Lifting Test

- ① Ms. Lee's class tested two tools that attract iron and steel. For the electromagnet trials, students wrapped wire around the same iron nail and connected it to the same battery. They used the same pile of paper clips in every test, including tests with a bar magnet. A switch let students start or stop the electric current.

PAPER CLIP TEST RESULTS

Tool and Test	Number of Clips Held
Electromagnet, switch on	18
Electromagnet, switch off	0
Bar magnet, no battery	12

- ② The electromagnet held 18 clips when the switch was on. It held no clips when the switch was off. The bar magnet held 12 clips and still held them when no battery was connected. These results show that an electromagnet works because electric current creates magnetism in its wire coil. A bar magnet has magnetism without current.
- ③ An electromagnet's purpose is to provide magnetism that can be turned on and off. A scrapyard crane can use one to lift steel, then release it by opening the switch. A bar magnet's purpose is to provide steady magnetism without a battery. It can be used in a compass needle or to hold papers on a refrigerator.

2 ANSWER WITH EVIDENCE Use the passage

1 What happened to the electromagnet's paper clips when the switch was turned off?

2 Which two test results support the claim that an electromagnet can be controlled with a switch?

3 Use evidence from the test to explain one difference in how an electromagnet and a bar magnet function.

4 A tool must stay magnetic where no battery is available. Which tool should be used? Support your claim with evidence from the passage.

3 YOUR TURN Your own words

A maker needs to pick up steel washers and drop them into separate containers without touching them. Write exactly 3 sentences that argue for an electromagnet or a bar magnet, using two test results as evidence.

PART 1 • READ AND MARK

Underline each sentence that reports a test result. Circle words or phrases that show how an electromagnet and a bar magnet function differently or have different purposes. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What happened to the electromagnet's paper clips when the switch was turned off?	It held no paper clips.
2	Which two test results support the claim that an electromagnet can be controlled with a switch?	It held 18 clips when the switch was on and 0 clips when the switch was off.
3	Use evidence from the test to explain one difference in how an electromagnet and a bar magnet function.	The electromagnet needed electric current because it held 18 clips with the switch on and 0 with it off. The bar magnet held 12 clips without a battery.
4	A tool must stay magnetic where no battery is available. Which tool should be used? Support your claim with evidence from the passage.	A bar magnet should be used because it held 12 clips when no battery was connected. It has magnetism without current.

PART 3 • YOUR TURN (SAMPLE ANSWER)

The maker should use an electromagnet. In the test, it held 18 clips when the switch was on, showing it can pick up steel washers. It held 0 clips when the switch was off, showing it can release washers into containers.

Accept claims that accurately use the reported test results to compare the tools. For the open response, the electromagnet is the supported choice because the task requires both picking up and releasing steel washers.